

"Cross Reference to Related Applications

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This application is a continuation of Application Serial No. 08/357,398, allowed."

IN THE CLAIMS:

Please cancel claims 1-14 and insert new claims 15-38 in their place as follows.

15 (New). A method of inducing in an individual a therapeutically effective immune response against an antigen

wherein said therapeutically effective immune response includes both a humoral immune response that includes a mucosal immune response and a cellular immune response that includes antigen specific cytotoxic T lymphocytes;

the method comprising the step of administering by topical or lavage administration to mucosal tissue of said individual, said mucosal tissue is selected from the group consisting of rectal, vaginal, urethral, sublingual and buccal, a nucleic acid molecule that comprises a nucleotide sequence that encodes said antigen operably linked to regulatory sequences in an amount effective to induce a therapeutically effective immune response against said antigen which said therapeutically effective immune response which includes both a humoral immune response that includes a mucosal immune response and a cellular immune response.

16 (New). The method of claim 15 wherein the antigen is a pathogen antigen.

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cond **17 (New).** The method of claim 15 wherein said nucleic acid molecule is administered vaginally.

18 (New). The method of claim 17 wherein the antigen is a pathogen antigen.

19 (New). The method of claim 17 wherein said nucleic acid molecule is administered using a suppository.

20 (New). The method of claim 15 wherein said nucleic acid molecule is administered rectally.

21 (New). The method of claim 20 wherein the antigen is a pathogen antigen.

22 (New). The method of claim 20 wherein said nucleic acid molecule is administered using a suppository.

23 (New). The method of claim 15 wherein said nucleic acid molecule is administered sublingually.

24 (New). The method of claim 23 wherein the antigen is a pathogen antigen.

25 (New). The method of claim 15 wherein said nucleic acid molecule is administered into buccal tissue.

26 (New). The method of claim 25 wherein the antigen is a pathogen antigen.

27 (New). A method of inducing in an individual a prophylactically effective immune response against an antigen

wherein said prophylactically effective immune response includes both a humoral immune response that includes a mucosal immune response and a cellular immune response that includes antigen specific cytotoxic T lymphocytes;

the method comprising the step of administering by topical or lavage administration to mucosal tissue of said individual, said mucosal tissue is selected from the group consisting of rectal, vaginal, urethral, sublingual and buccal, a nucleic acid molecule that comprises a nucleotide sequence that encodes said antigen operably linked to regulatory sequences in an amount effective to induce a prophylactically effective immune response against said antigen which said prophylactically effective immune response which includes both a humoral immune response that includes a mucosal immune response and a cellular immune response.

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- 28 (New). The method of claim 27 wherein the antigen is a pathogen antigen.
- 29 (New). The method of claim 27 wherein said nucleic acid molecule is administered vaginally.
- 30 (New). The method of claim 29 wherein the antigen is a pathogen antigen.
- 31 (New). The method of claim 29 wherein said nucleic acid molecule is administered using a suppository.
- 32 (New). The method of claim 27 wherein said nucleic acid molecule is administered rectally.
- 33 (New). The method of claim 32 wherein the antigen is a pathogen antigen.
- 34 (New). The method of claim 32 wherein said nucleic acid molecule is administered using a suppository.
- 35 (New). The method of claim 27 wherein said nucleic acid molecule is administered